Skeletal Suspension in the Treatment of Decubiti

ALBERT G. CLARK, M.D., *San Francisco*

SUMMARY

In the usual sacral decubitus, pressure may be relieved by skeletal suspension from Kirschner wires placed in the ilian crests. Pressure sores over the scapulae and thoracic spine may be handled by placing Kirschner wires through the clavicles. Both of these methods lend themselves to the preoperative care of a patient being prepared for the plastic closure of a decubitus.

IN the handling of large numbers of war casualties, one troublesome problem was the large number of decubiti encountered. Primarily, these were found in patients with injury to the spinal cord, but they occurred also in patients with other severe injuries such as burns and abdominal and chest wounds. The decubiti encountered were not only large but multiple, involving in the same patient, the sacral and scapular areas, the anterior surfaces of both knees, both shins, both heels, both trochanteric and both iliac areas. Decubiti are, of course, much less frequently encountered in civilian practice, but they do occur in patients with severe burns, in paraplegics and in patients debilitated from any cause.

Extensive decubiti almost always produce toxemia and usually pronounced anemia along with a low leukocyte count and low hematocrit reading. Recently it has been shown that pronounced hypoproteinemia occurs as well. Mulholland,[4] who carefully checked the protein intake and output in some 35 patients, found that there was a negative nitrogen balance with a consistently low blood protein value in all of them. He found that intubation and forced feeding with a high protein diet were of more value than blood transfusions. In patients with severe burns and in debilitated patients of all types the hypoproteinemia precedes and is a direct cause of the ulcer. In paraplegics the hypoproteinemia is secondary to the exudation of protein from the decubitus.

Obviously, it is best to prevent decubiti if possible, first by the maintenance of adequate nutrition, and secondly by the avoidance of prolonged pressure. Once ulcers have formed they are difficult to control. Aside from any other consideration, decubitus ulcers increase tremendously the nursing care required for these patients.

Plastic closure of such ulcers has been recommended by many investigators[1,2,7] since the termination of World War II. Ulcers which have attained a large size, however, are usually infected and necrotic. Furthermore, the underlying viable tissue may be so ischemic that a plastic closure or the application of a skin graft is out of the question. No method of treatment of these lesions is satisfactory unless pressure is removed from the area.

From the Department of Surgery, University of California Medical School.

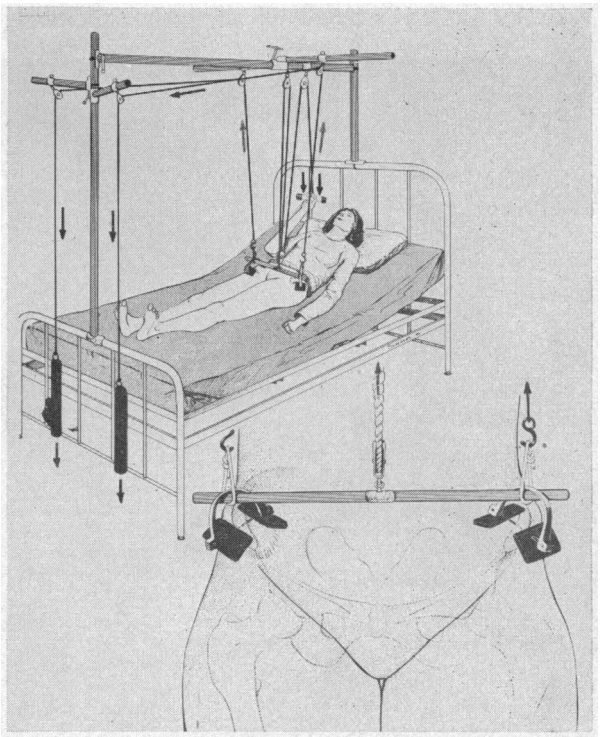

Figure 1.—Skeletal suspension through the iliac crests.

The usual methods of avoiding pressure by the use of air rings, air mattresses and routine turning of the patients are fairly satisfactory for the treatment of smaller decubiti, but are inadequate for the control of extensive ulcers. A procedure which more effectively reduces pressure on the affected areas is the use of overhead suspension by means of Kirschner wires placed through the iliac crests. This method was described by Westhues[6] and by Klapp[3] in the German war literature, and experience with it was reported by Schneider and Stapff.[5] The author has used the method, with modifications.

METHOD

With local anesthesia (in paraplegic patients anesthesia is unnecessary) Kirschner wires are drilled through the most anterior portions of both iliac crests, the wires being placed as deep in the ilium as the configuration of the patient's body will allow. To avoid slipping of the wire and consequent pressure, heavy felt should be placed between the inner sides of the bows and the patient's skin. (Figure 1 shows the procedure in detail.) The wire

spreader bows are hooked onto a spreader bar and traction is applied by means of weight. Depending upon the weight of the patient, the weight on each bow varies from 20 to 25 pounds, but the traction should not be heavy enough to lift the patient from the bed. A rope attached to the middle of the spreader bar has a handle on the other end which enables the patient to raise himself whenever it is necessary to use a bedpan or change the dressings. All traction is released several times a day and the patient is turned on either side for periods of one hour each. This method has been used even in the presence of rather moist dressings around a suprapubic drainage tube.

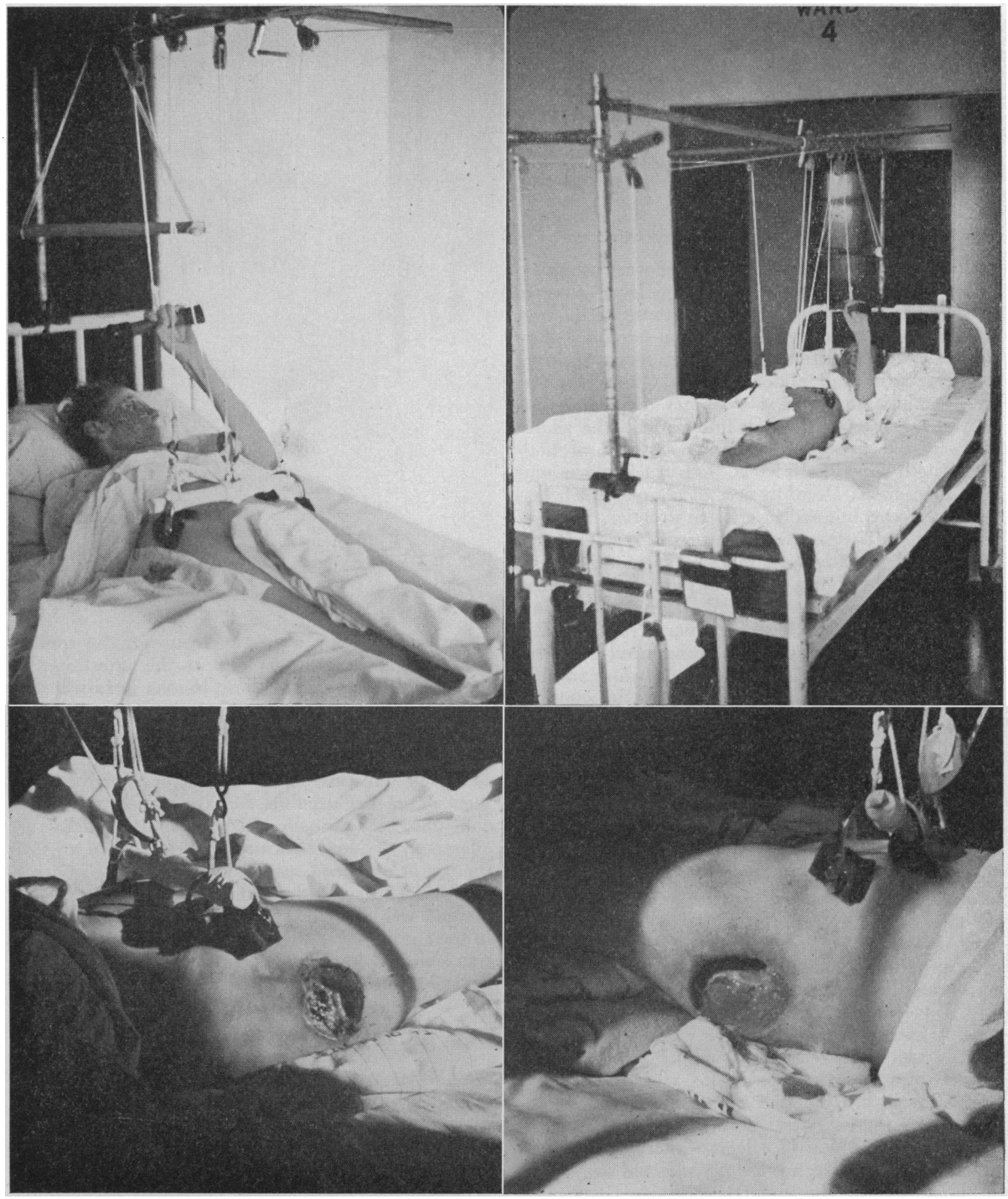

Figure 3.—Photographs of a patient with multiple decubiti who has iliac suspension. Upper pictures show the overall arrangement of the skeletal suspension set-up. The lower pictures show a Kirschner wire placed through the iliac crests with the felt pads protecting the skin from the wire bows. Bilateral trochanteric decubiti are also shown.

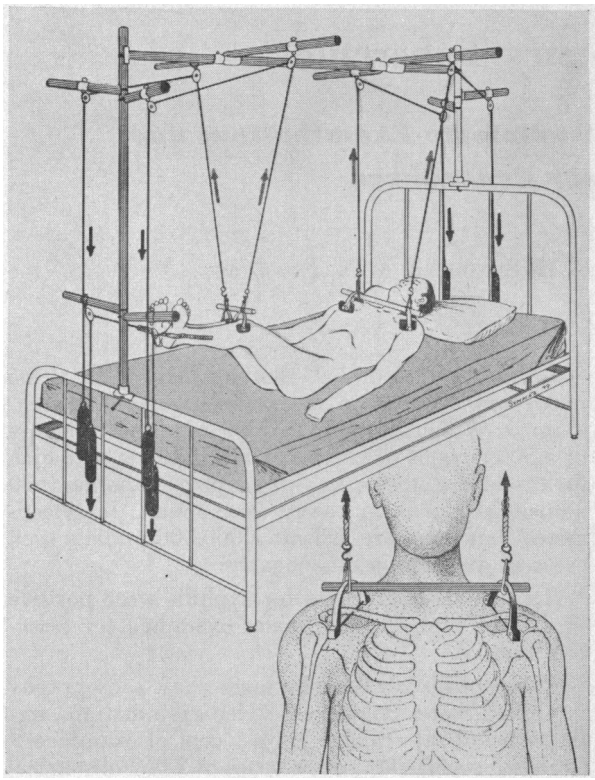

Figure 2.—Skeletal suspension through the clavicle and through the tibial tuberosities.

Pressure sores over the scapulae and thoracic spine may require some shoulder girdle suspension. Obviously, not much weight can be used. A method of suspension by Kirschner wires through the clavicles is diagrammed in Figure 2. As the patients are all considerably underweight, no difficulty is encountered in placing a wire through the midportion of the clavicle. Again it is advisable to pad the inner sides of the bows to avoid slipping of the wires with consequent pressure sores. The author has put only five to ten pounds weight on each of these wires lest more traction dislocate the clavicles.

By means of this overhead suspension even extensive, infected decubiti have been brought under control. With avoidance of pressure further spread and extension of decubiti is prevented, and after several weeks of this balanced suspension the blood supply to the ulcerated area improves. Necrotic skin and underlying tissue are excised and the bed of the ulcer is ready for skin grafting or plastic closure. Skin grafts applied to these ulcers have taken whenever pressure on the grafted area could be prevented.

The method described has been employed principally in patients with injury to the spinal cord. It is suitable for the treatment of bedsores resulting from other causes, with the following exceptions:

1. In civilian practice occasionally a patient is encountered who has been bedridden for years with the eventual production of sacral decubiti. Osteoporosis is always present in such patients and the iliac bone is not strong enough to sustain a Kirschner wire. It has been suggested by Klapp[3] that, for heavy patients, additional overhead support can be obtained by means of transfixion of the symphysis and both pubic bones with a Kirschner wire. The author has had no experience with this method, but it might be of value in patients with osteoporosis.

2. In patients with burns or wounds involving the iliac crests or with nearby draining colostomies, it is of course inadvisable to use iliac suspension. In one such case, as shown in Figure 3, Kirschner wires were placed through both tibial tubercles and some of the pelvic weight supported in this manner. The weights used should allow the patient's back to rest lightly on the bed so that a hand may be slipped between the patient's back and the bed without difficulty. The adhesive skin traction on the lower legs is used merely to support the lower legs. Right angle suspension of the legs such as that used in the treatment of fractured femurs in infants is impractical because of the poor circulation in these patients.

Balanced body suspension by means of Kirschner wires placed through the iliac crests is useful in the care of patients with large decubiti. Shoulder girdle suspension to prevent pressure on the scapulae can be obtained by placing Kirschner wires through the clavicles.

REFERENCES

1. Freeman, B.: The treatment of bedsores in paraplegic patients, Surgery, 21:668-674, Mar. 1947.

2. Gibbon, J. H., and Freeman, L. W.: The primary closure of decubitus ulcers, Ann. Surg., 124:1048-1164, Dec. 1946.

3. Klapp, W.: A note upon R. Klapp's method of pelvic suspension, Zeit F. Chirurg., 69:1567-9; Abs. Bull. of War. Med., 3-493, 1942-43.

4. Mulholland, J. H., et al.: Protein metabolism and bedsores, Ann. Surg., 118:1015-1023, Dec. 1943.

5. Schneider, J., and Stapff, R.: Experience with Klapp's method of wire suspension, applied to the pelvis, Zeit F. Chirurg., 69:1559-66.

6. Westhues, H.: Half suspension of the pelvis, Der. Chirurg., 14:489-93, Aug. 15, 1942; Abs. Bull. War. Med., 3:440, 1942-43.

7. White, J. C., and Hamm, W. F.: Primary closure of bedsores by plastic surgery, Ann. Surg., 124:1146-47, Dec. 1946.